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"Welcome Shelter Near Trail's End"

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

FOR OREGON

APRIL 1, 1947

By

Division of Irrigation, Soil Conservation Service

United States Department of Agriculture

and

Oregon Agricultural Experiment Station

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U. S. DEPARTMENT OF AGRICULTURE

Data included in this report were obtained by the agencies named above in cooperation with the Oregon State Engineer, U. S. Forest Service, National Park Service and other Federal, State and local organizations.

TABLE OF CONTENTS

	<u>Page</u>
Water Supply Forecast, Map of	Preceding 1
Snow Course Location Map	Preceding 1
Water Supply Outlook	1
Water Supply By Acreage	2
Stream Flow Forecasts, summarized	2-3
Snow-Stored Water, April 1, Compared with Previous Years	4
Snow-Stored Water, April 1 Status	5-6
Watershed Soil Moisture, April 1 Compared with Previous Years	7-8
Reservoired Water	9
Valley Precipitation	10
Snow Survey Measurements	10-18
Forecast Committee Reports	19-27
Cooperators, List of	Inside Back Cover

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FOR
OREGON

Report Prepared

by

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April 1, 1947

FINAL WATER SUPPLY OUTLOOK

Oregon's 1947 water supply prospect has shown but slight improvement since February 1, and will be comparable to 1944 conditions in many areas. 72 percent of all irrigated lands have in sight "good" to "fair" water supplies. These are lands served chiefly from reservoirs having substantial "holdover" from 1946. Most lands depending upon unregulated stream flow will have "deficient" to "fair" water supplies.

Mountain snow cover at this date is below average on 91 percent of all measured courses. Snow-stored water now present above 5,000 feet is only 67 percent of average, while that between 2,000 and 5,000 feet is only 33 percent of average. New low records of snowfall were established on 18 percent of all measured courses, with 9 out of 14 courses on the Cwyhee River showing new low records. If precipitation during the runoff season is normal or less, stream flow below normal during the irrigation season is certain for all of Oregon except Hood River and Wallowa River.

Watershed soils are generally wetter than average, thus favoring flow from the deficient snow pack.

Total water stored in all reservoirs is about 3 percent less than at this date last year, 5 percent more than in 1945, 7 percent more than in 1944, and 1 percent more than the 10-year average. 73 percent of the more important reservoirs are half full or better.

Precipitation accumulated in Oregon valleys since October 1 averages 93 percent of normal, as compared with 117 percent of normal last year. Greatest deficiency is in the Columbia River wheat lands where precipitation is 76 percent of normal.

Crop land soil moisture is generally good with fallow lands better than average. Irrigation is under way in some areas, principally where critical shortages are expected.

Streamflow forecasts are summarized on pages 2 and 3 of this report, and reports of forecast committees are detailed beginning on page 19.

Explanation of Water Forecast Map Preceding Page 1

Tabulated below are figures indicating for what percentage of Oregon's irrigated acreage (1,049,176 acres total by 16th U. S. Census, 1940) the 1947 irrigation water supply is expected to be "good" or otherwise. The descriptive words indicate whether or not the prospective water supply to the given percentages of the total is expected to be, by local standards, deficient, fair (generally adequate but somewhat short late in the season), or good, for crop production on the usual acreage. These differences are shown in color on the map preceding page 1.

Prospective 1947 Irrig. Supply:	Deficient	Fair	Good	No Forecast	Total
Percent of Total Irrigated Area:	25	20	52	3	100

FINAL STREAMFLOW FORECASTS, April 1, 1947

The following summarized runoff forecasts are based on mountain snow cover and on the assumption that precipitation and temperature during the runoff season will be approximately normal. Appreciable deviations from normal of temperature and/or precipitation, especially during April, May, or June, will correspondingly modify these forecasts.

BASIN AND STREAM	Apr.-Sept., inc. Streamflow in Thous. A. F.				
	Forecast	Measured Runoff		10-yr. avg.	
	1947	1946	1945	1944	1936-45
<u>NORTHCENTRAL OREGON</u>					
Hood River, West Fork nr. Dee	138.0	a	149.8	106.4	136.5
White R. below Tygh Valley	60.0	181.0	119.3	87.6	129.9
<u>UMATILLA-WALLA WALLA</u>					
McKay Creek above McKay Reservoir	17.0	a	34.5	26.3	26.5
Umatilla River near Gibbon	62.0	103.5	94.2	63.6	77.7
Umatilla River at Pendleton	100.0	193.7	188.7	122.7	152.4
Walla Walla R., So. Fk. nr. Milton	54.0	a	69.8	55.8	62.8
<u>NORTHEASTERN OREGON</u>					
Imnaha River at Imnaha	300.0	320.5	291.4	189.0	268.6
Wallowa R., E. Fk. plus Power Plant	12.0	13.3	10.9	8.5	10.1
Hurricane Creek near Joseph	43.0	a	41.8	32.6	39.4
Lostine River near Lostine	115.0	a	125.6	89.8	110.2
Bear Creek near Wallowa	58.0	a	65.5	55.3	62.6
Grande Ronde River nr. LaGrande	115.0	a	168.4	93.3	155.0
Catherine Creek near Union	60.0	a	69.0	48.7	63.6
Powder River at Salisbury	29.0	a	54.6	26.6	55.0
Burnt R. nr. Hereford (Natural flow)	25.0	a	33.6	14.8	34.3

Streamflow Forecasts, April, 1947 (Cont'd)

BASIN AND STREAM	Apr.-Sept., inc. Streamflow in Thous. A.F.				
	Forecast	Measured	Runoff	10-yr. avg.	
	1947	1946	1945	1944	1936-45
<u>EASTERN OREGON</u>					
John Day River at Prairie City, combined with Power Canal	33.0	62.3	46.6	28.1	43.2
John Day R., Mid.Fk. at Ritter	80.0	140.2	116.5	58.0	103.3
John Day R., No.Fk. near Dale	160.0	267.8	207.6	105.5	208.7
Strawberry Creek nr. Prairie City	6.0	9.9	8.0	5.1	7.5
Malheur R., Mid.Fk. near Drewsey	30.0	a	80.4	27.2	73.2
Malheur R., No.Fk., at Baulah	28.0	a	53.6	29.9	56.9
Owyhee R. above Owyhee Reservoir	200.0	467.3	646.9	309.4	458.2
<u>HARNEY BASIN</u>					
Silvies River near Burns	30.0	99.6	98.6	22.5	84.4
<u>CENTRAL OREGON</u>					
Ochoco Reservoir Net Inflow	2.5	a	29.6	5.3	18.0
Crescent Lake Net Inflow	12.0	a	11.1	9.2	12.7
Deschutes R. below Snow Creek	45.0	a	37.7	31.9	42.9
Odell Creek near Crescent	23.0	32.6	24.1	20.1	24.4
Tumalo Creek and C.S. Canal	38.0	a	38.5	30.5	41.8
Squaw Creek near Sisters	44.0	63.5	38.4	30.6	44.1
<u>SOUTHCENTRAL OREGON</u>					
Chewaucan River near Paisley	30.0 ^b	a	65.3 ^b	33.6 ^b	65.4 ^b
Deep Creek above Adel	30.0 ^b	a	70.2 ^b	40.1 ^b	62.2 ^b
<u>KLAMATH BASIN</u>					
Sprague River above Chiloquin	125.0	261.9	207.1	133.7	232.4
Williamson R. below Sprague R.	240.0	415.4	332.5	263.2	375.0
Upper Klamath Lake Net Inflow	375.0	557.0	409.9	395.9	481.7
<u>SOUTHERN OREGON</u>					
Applegate River near Ruch	55.0	129.6	114.0	63.9	125.7
Hyatt Reservoir Net Inflow	1.8	5.5	5.8	4.2	5.8
Fourmile Lake Net Inflow	5.0	8.7	7.3	5.9	6.9
Little Butte Creek, N.Fk., below Fish Lake (Natural Flow)	8.5	a	13.8	11.5	13.3
Rogue R., So.Fk. above Imnaha Creek	30.0	a	54.4	40.1	52.1
Rogue R., Mid.Fk. plus Power Canal	50.0	a	74.5	61.4	69.9
Rogue River N.Fk. above Prospect	210.0	370.4	295.4	237.3	286.6
Rogue River below So. Fk.	460.0	a	656.4	533.4	629.4
Clearwater River above Trap Creek	50.0	65.7	55.5	55.1	56.8
No.Umpqua R. below Lake Creek	124.0	179.1	148.6	133.7	145.0
No.Umpqua R. at Toketee Falls	285.0	407.3	348.1	295.4	336.8
<u>WILLAMETTE VALLEY</u>					
Willamette R., Mid.Fk. at Eula	600.0	a	889.2	555.6	749.4
McKenzie R. at McKenzie Bridge	490.0	595.2	533.9	422.7	512.7
McKenzie River near Vida	1000.0	1227.8	1230.8	862.9	1103.9
Clackamas R. at Big Bottom	100.0	a	145.1	110.8	149.7

a. 1946 Discharge record not available. - b. April-June rather than April-Sept.

STATUS OF SNOW COVER AS OF APRIL FIRST

Summary of Snow Survey Data

By Watersheds as of About April First

Stream Basin	Number Of Snow Courses Averaged	Average Water Depth in Snow Cover (Inches)			Yrs. Avg. Past Yrs. of Record	Yrs. of Rec- ord	1947 Snow Water Depth (Inches) as Percent of that in		
		1947	1946	1945			1946	1945	Avg.
Owyhee River	14	2.2	7.8				28		
	14	2.2		11.3				19	
	14	2.2			7.8	(6-12)			28
Malheur River	5	4.6	12.7				36		
	6	3.8		7.5				51	
	6	3.8			7.6	(2-17)			50
Burnt River	4	2.6	12.4				21		
	4	2.6		9.4				28	
	4	2.6			8.6	(2-14)			30
Powder River	7	12.8	19.9				64		
	7	12.8		15.8				81	
	7	12.8			15.3	(8-11)			84
Pine Creek	1	21.4	36.3				59		
	1	21.4		26.1				82	
	1	21.4			28.3	(9)			76
Imnaha River	3	22.5	31.9				70		
	3	22.5		21.1				107	
	3	22.5			24.9	(2-13)			90
Grande Ronde River	10	18.7	25.7				73		
	9	20.1		19.6				102	
	10	18.7			20.0	(5-18)			94
Walla Walla River	1	21.4	39.9				54		
	1	21.4		26.0				82	
	1	21.4			25.9	(16)			83
Umatilla River	4	8.0	19.7				41		
	3	7.3		14.5				50	
	4	8.0			12.7	(8-18)			63
Willow Creek	1	3.7	15.6				24		
	1	3.7		11.8				31	
	1	3.7			9.9	(18)			37
John Day River	10	7.6	16.0				48		
	10	7.6		11.7				65	
	10	7.6			11.0	(3-18)			69
Deschutes River	9	13.0	30.5				43		
	9	13.0		12.5				104	
	9	13.0			18.2	(2-18)			71
Crooked River	3	1.8	11.0				16		
	3	1.8		7.5				24	
	3	1.8			7.1	(9-18)			25
Hood River	1	1.6	20.3				8		
	1	1.6		8.0				20	
	1	1.6			9.3	(14)			17
Sandy River	3	22.0	47.9				46		
	3	22.0		24.1				91	
	3	22.0			29.1	(10-15)			76

Status of Snow Cover (Cont'd.)

Stream Basin	Number Of Snow Courses Averaged	Average Water Depth in Snow Cover (Inches)				Yrs. of Rec- ord	1947 Snow Water Depth (Inches) as Percent of that in		
		1947	1946	1945	Avg. Past Record		1946	1945	Avg.
Clackamas River	1	8.7	24.8				35		
	1	8.7		10.4				84	
	1	8.7			16.5	(10)			53
Willamette River	8	16.6	40.5				41		
	8	16.6		17.8				93	
	8	16.6			21.5	(6-17)			77
Silver Lake Basin	1	0.0	3.4				0		
	1	0.0		0.0				100	
	1	0.0			1.1	(6)			0
Chewaucan River	1	1.3	11.0				12		
	1	1.3		7.8				17	
	1	1.3			5.6	(8)			23
Warner Lake	1	2.4	13.6				18		
	1	2.4		10.9				22	
	1	2.4			9.4	(8)			25
Guano Lake	2	0.0	4.0				0		
	2	0.0		6.4				0	
	2	0.0			4.8	(7)			0
Harney Basin	7	1.6	7.8				20		
	9	4.5		10.8				42	
	9	4.5			8.7	(3-16)			52
Umpqua River	6	4.2	21.5				20		
	7	6.5		12.7				51	
	7	6.5			14.0	(8-18)			46
Upper Rogue River	13	12.7	28.7				44		
	14	13.2		19.5				68	
	14	13.2			22.6	(3-16)			58
Applegate River	4	14.2	25.8				55		
	5	14.9		19.7				76	
	5	14.9			22.8	(5-12)			65
Illinois River	2	3.6	17.2				21		
	2	3.6		14.0				26	
	2	3.6			16.6	(10-11)			22
Klamath Lake Basin	22*	8.0	20.9				38		
	22*	8.2		12.1				68	
	22*	7.8			13.9	(3-20)			56
Goose Lake Basin	3*	0.8	10.2				8		
	4*	1.3		7.6				17	
	4*	1.3			5.4	(6-16)			24

* Including Copco water measurement stations.

STATUS OF WATERSHED SOIL MOISTURE

Soil moisture samples were not secured on Southern Oregon watershed soil moisture stations in the spring of 1947. Samples elsewhere in Oregon were secured at established soil moisture stations as included in the tabulation below.

Summary of Soil Moisture in March
Central and Eastern Oregon 1940-1947
(Soil moisture is expressed as percentage of the soil dry weight.)

Soil Moisture Station	Date	Depth in Feet								3-5 or 3-6		0-5 or 0-6
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	0-3	3-6	0-6
Battle Mtn.	3-22-45	40	25	13	11	16	17	Bedrock		26	15	20
Elev. 4340	3-13-46	35	26	16	14	14	18	"		26	15	20
Sec. 29	3-15-47	44	27	21	24	21	20	"		31	22	26
T. 3 S.												
R. 31 E.												
Beech Creek	3-22-45	64	30	22	31	39	47	Bedrock		39	39	39
Summit	3-13-46	50	34	24	29	39	44	"		36	37	37
Elev. 4800	3-15-47	70	36	25	30	34	42	"		44	35	39
Sec. 4												
T. 12 S.												
R. 30 E.												
Blue Mtn.	3-26-40	55	32	25	29	23	-	Bedrock		38	-	-
Summit	3-19-41	61	37	31	27	30	32	"		43	30	37
Elev. 5098	3-21-42	55	46	36	30	33	35	"		46	33	39
Sec. 6	3-26-44	55	31	26	28	31	39	"		37	32	35
T. 12 S.	3-26-45	47	29	34	37	35	35	"		36	36	36
R. 36 E.	3-17-46	55	32	38	42	36	26	"		42	34	38
	3-20-47	74	30	33	33	34	30	"		46	32	39
Catherine Creek	3-22-42	60	52	46	40	39	43	43	53	52	41	47
	3-24-44	54	26	25	25	27	28	32	37	35	27	31
Elev. 4240	3-24-45	61	41	26	37	36	44	48	66	43	39	41
Sec. 27	3-15-46	46	38	28	34	29	34	65	62	38	32	35
T. 5 S.	3-18-47	68	48	40	42	46	47	46	47	52	45	48
R. 41 E.												
Chemult	3-27-40	63	54	51	53	42	38	42	45	56	44	50
Elev. 4760	3-18-41	57	36	36	37	37	38	41	44	43	37	40
Sec. 21	3-20-42	36	35	39	36	37	39	42	46	37	37	37
T. 27 S.	3-21-44	59	35	33	32	35	36	38	42	42	34	38
R. 8 E.	3-20-45	73	36	39	39	39	40	44	47	49	39	44
	3-10-46	36	35	34	34	35	34	37	42	35	34	35
	3-12-47	60	49	40	35	37	38	41	44	50	37	43
Dooley Mtn.	3-19-41	47	22	20	19	25	22	Bedrock		30	22	26
Elev. 5300	3-22-42	51	35	25	26	-	-	"		37	-	-
Sec. 32	3-26-44	44	26	15	10	11	-	"		28	-	-
T. 11 S.	3-26-45	60	30	15	14	-	-	"		35	-	-
R. 40 E.	3-17-46	46	24	14	12	15	-	"		28	-	-
	3-20-47	50	24	19	18	16	-	"		31	-	-
Emigrant Sp.	3-23-42	72	67	34	29	29	38	34	-	58	32	45
Elev. 3900	3-24-44	60	32	25	22	25	-	-	-	39	-	-
Sec. 29	3-24-45	60	58	36	28	31	47	-	-	51	36	43
T. 1 N.	3-15-46	66	60	35	30	38	46	-	-	54	38	46
R. 35 E.	3-17-47	76	50	44	27	33	41	-	-	57	34	45

(Continued on page 8)

(Cont.)

Status of Watershed Soil Moisture

Soil Moisture		Depth in Feet										3-5	0-5
Station	Date	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	0-3	3-6	or	or
Granite-	3-19-41	58	25	14	15	8	Bedrock			32	11	24	
Sumpter Div.	3-24-42	45	18	13	15	16	"			25	16	22	
Elev. 5790	3-25-44	55	20	11	7	12	"			29	10	21	
Sec. 22	3-16-46	58	22	12	11	12	"			31	11	23	
T. 9 S.	3-19-47	45	31	15	12	16	"			30	14	24	
R. 36 E.													
Hogg Pass	3-28-45	36	19	47	48	45	64	Bedrock		34	52	43	
Elev. 4755	3-11-46	21	16	30	23	-	-	"		22	-	-	
Sec. 24	3-13-47	34	42	39	43	38	-	"		38	-	-	
T. 13 S.													
R. 7½ E.													
Ochoco	3-26-40	58	54	60	42	41	42	40	43	57	42	50	
Mountain	3-18-41	56	50	44	42	45	45	46	46	50	44	47	
Elev. 5080	3-21-42	50	55	46	44	42	44	43	40	50	44	47	
Sec. 8	3-22-44	62	44	42	41	37	39	41	39	49	39	44	
T. 13 S.	3-21-45	55	52	49	46	44	43	42	35	52	44	48	
R. 20 E.	3-12-46	48	51	55	48	51	46	53	49	51	48	50	
	3-14-47	78	54	42	42	41	44	44	42	58	42	50	
Starr Ridge	3-24-42	35	28	27	16	13	15	14	14	30	15	22	
Elev. 5156	3-27-44	40	26	20	13	14	13	16	15	28	13	21	
Sec. 20	3-27-45	43	20	13	14	14	14	14	17	25	14	19	
T. 15 S.	3-12-46	39	27	17	15	13	14	17	-	28	14	21	
R. 31 E.	3-14-47	54	34	26	22	21	16	19	25	38	20	29	
Tollgate	3-23-42	66	56	33	32	31	37	38	43	52	33	42	
Elev. 5070	3-23-44	61	53	36	34	31	34	39	46	50	33	41	
Sec. 32	3-23-45	65	49	34	31	34	36	52	51	50	34	42	
T. 4 N.	3-14-46	65	46	35	34	33	37	40	45	49	35	42	
R. 38 E.	3-17-47	67	61	46	36	35	41	39	44	58	38	48	

Soil moisture conditions in the high watersheds appear now to be better than average in most areas. Therefore, 1947 runoff may be slightly greater than indicated by the snow surveys alone.

STATUS OF RESERVOIR STORAGE, April 1, 1947

BASIN AND STREAM	RESERVOIR	USABLE CAPACITY (Thous.A.F.)	THOUS.A.F. IN STORAGE ABOUT APRIL 1.				
			1947	1946	1945	1944	10-yr.avg. 1936-45
UPPER COLUMBIA DRAINAGE							
LOWER SNAKE IN OREGON							
<u>Owyhee</u>	Antelope	36.5	11.0	15.0	22.6	4.5	18.5
	Owyhee	715.0	595.4	681.6	606.4	525.9	630.2
<u>Malheur</u>	Warm Springs	191.0	136.0	139.5	90.1	131.4	125.9
	Agency Valley	60.0	51.0	54.7	60.0	50.2	47.9
	Willow Creek	26.0	N.R.	N.R.	13.0	11.6	7.1 ^d
<u>Burnt</u>	Unity	25.2	24.0	14.8	13.0	12.4	16.4
<u>Powder</u>	Thief Valley	17.4	17.4	17.5	17.4	17.4	17.0
<u>Grande Ronde</u>	Wallowa Lake	40.9	24.4	12.2	12.0	31.9	20.8
LOWER COLUMBIA DRAINAGE							
<u>Umatilla</u>	McKay	74.0	66.3	62.0	62.0	54.2	50.8
	Cold Springs	50.0	50.0	49.0	42.0	50.0	44.2
<u>Deschutes</u>	Ochoco	46.0	32.4	43.8	11.4	24.0	21.0
	Crescent Lake	80.0	52.0	33.3	34.4	54.3	35.1
	Crane Prairie	50.0	42.0	39.6	32.3	47.3	35.4
	Wickiup	180.0	97.8	70.6	67.2	9.0	28.4 ^e
	Rock Creek	1.4	1.4	1.4	0.8	0.8	0.8 ^f
<u>Willamette</u>	Cottage Grove	33.1 ^b	23.6	19.2	20.1	19.9	21.2 ^e
	Fern Ridge	101.2 ^b	75.0	63.5	69.2	35.4	56.9 ^g
INTERIOR DRAINAGE							
<u>Silver Lake</u>	Thompson Valley	17.4	8.2	4.0	2.3	7.2	6.2 ^e
WEST COAST DRAINAGE							
<u>Rogue</u>	Fish Lake	7.7	4.6	4.2	4.0	7.0	5.0
	Fourmile Lake ^a	16.0	5.1	5.1	8.6	11.8	8.2
	Emigrant Gap	8.2	6.8	8.2	7.9	5.6	7.7
	Hyatt Prairie ^a	16.0	3.4	3.9	4.1	7.6	7.4
<u>Klamath</u>	Upper Klamath L.	584.0 ^c	407.8	385.1	366.1	415.4	467.1
	Gerber	94.0	42.5	51.9	60.1	53.9	59.5
	Clear Lake	440.2	226.7	282.4	284.0	296.1	241.4
<u>Goose Lake</u>	Cottonwood	4.1	3.0	0.0	1.9	0.4	1.2 ^h
	Drew	62.5	35.3	46.3	47.0	43.6	48.4

N.R.= No report

a = By ditch to Rogue River side
from Klamath drainage.

b = Storage space reserved for flood control

c = Based on gage zero elevation of 4135.0

d = Excl. '36, '41, '42

e = 1943-45

f = 1944-45

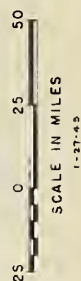
g = 1942-45

h = Excl. '37, '38, '42

IMPORTANT OREGON RESERVOIRS



RESERVOIR NAME	NUMBER
Agency Valley	1354
Antelope	1230
Clear Lake	823
Clear Lake	36R1
Cold Springs	22R1
Cottage Grove	5220
Callonwood	8115
Crane Prairie	3220
Crescent Lake	322
Drew Creek	814
Emigrant Gap	7267
Fern Ridge	5413
Fish Lake	7237
Four Mile Lake	8321
Gerber	8215
Hyatt Prairie	8320
McKay	2231
Ochoco	3420
Owyhee	1234
Rock Creek	36R3
Thief Valley	1514
Thompson Valley	9411
Unity	1415
Upper Klamath Lake	832
Wallawa Lake	186
Warm Springs	1322
Wickiup	3137
Willow Creek No. 3	1323



VALLEY PRECIPITATION^a

DIVISION	CURRENT YEAR		LAST YEAR	
	Oct. 1, 1946--April 1, 1947		Oct. 1, 1945--April 1, 1946	
	P	D	P	D
Southeastern	5.2	-0.8	6.58	+0.41
Southcentral	8.6	-1.9	11.22	+1.70
Northcentral	7.3	-0.6	11.63	+3.19
Columbia River	6.5	-2.1	9.36	+0.74
Wallowa Mountains	8.2	-0.9	9.30	-0.53
Blue Mountains	11.3	-0.2	12.46	+0.64
Southern	15.6	-2.4	22.13	+4.43
Willamette Valley	41.7	+1.3	48.37	+8.21

P = Inches Precipitation

D = Inches Departure from Normal

<u>Southeastern:</u>	Southeastern Oregon range lands, Harney and Malheur Counties.
<u>Southcentral:</u>	Southcentral Oregon range lands, Lake County and Klamath County, except the Cascade Mountains.
<u>Northcentral:</u>	Northcentral Oregon wheat and range lands, Crook, Deschutes, Jefferson, Wheeler, and part of Grant Counties.
<u>Columbia River:</u>	Columbia River area, wheat and range lands, Gilliam, Morrow, Sherman, Wasco, and part of Umatilla Counties.
<u>Wallowa Mountains:</u>	Wallowa Mountain area, forest and range lands, Wallowa and part of Baker County.
<u>Blue Mountains:</u>	Blue Mountain forest and range lands, Union, and parts of Baker, Grant, and Umatilla Counties.
<u>Southern:</u>	Southern Oregon irrigated section, Jackson and Josephine Counties.
<u>Willamette Valley:</u>	Parts of Polk, Benton, Yamhill, Washington, and Lane; all of Linn, Marion, Clackamas, and Multnomah Counties.

a - Data furnished by U. S. Weather Bureau.

OREGON SNOW SURVEYS, APRIL, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION		SNOW COVER MEASUREMENTS							
	Number or State	Sec. Twp. Range Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Years of Record	Past Record Av. Water Content (Inches)	
					1947	1946	1945			

a - Telegraphic: subject to minor revision

OREGON SNOW SURVEYS, APRIL, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION			SNOW COVER MEASUREMENTS										
	Number or State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Years of Record	Past Record		
								Same Date	1946	1945				
BURNT RIVER														
Barney Creek	143	16	14S	36E	5950	3-27	15.0	5.2	11.2	7.2	2	9.2		
Blue Mountain Summit	141	6	12S	36E	5098	3-26	6.3	2.4	11.3	7.7	12	6.8		
Dooley Mountain	156	32	11S	40E	5430	3-28	-	1.9 ^a	10.8	10.3	8	8.5		
Tipton	142	34	10S	35½E	5100	3-31	3.5	1.0	16.1	12.5	14	9.9		
POWDER RIVER														
Anthony Lake	155	18	7S	37E	7125	3-26	72.4	30.6	36.0	22.1	11	25.8		
Bourne	154	33	8S	37E	5800	3-28	28.6	9.6	20.6	22.5	11	15.2		
Dooley Mountain	156	32	11S	40E	5430	3-28	-	1.9 ^a	10.8	10.3	8	8.5		
Eilertson Meadows	151B	18	8S	38E	5400	3-27	12.9	6.8	15.2	8.9	9	11.2		
Gold Center	249	21	9S	36E	5340	3-29	22.6	6.9	14.6	12.7	8	10.6		
Goodrich Lake	157	34 & 35	8S	38E	6700	3-31	71.6	31.3	New Snow Course					
Summit Springs	184	9	6S	37E	6000	3-27	50.0	21.8	20.5	19.2	11	20.8		
Taylor Green	185	3	6S	42E	5740	3-30	33.8	12.4	21.4	14.7	9	15.3		
PINE CREEK														
Schneider Meadows	161	35	6S	45E	5400	3-30	52.6	21.4	36.3	26.1	9	28.3		
IMNAHA RIVER														
Aneroid Lake No. 1	183	16	4S	45E	7480	3-29	91.4	38.2	44.1	30.5	13	34.2		
Aneroid Lake No. 2	183A	16	4S	45E	7000	3-29	69.7	29.4	33.0	24.9	5	27.3		
Coverdale	171	22	5S	47E	4250	3-29	0.0	0.0	18.5	7.8	2	13.2		
GRANDE RONDE RIVER														
Aneroid Lake No. 1	183	16	4S	45E	7480	3-29	91.4	38.2	44.1	30.5	13	34.2		
Aneroid Lake No. 2	183A	16	4S	45E	7000	3-29	69.7	29.4	33.0	24.9	5	27.3		
Anthony Lake	155	18	7S	37E	7125	3-26	72.4	30.6	36.0	22.1	11	25.8		

a - Telegraphic: subject to minor revision.

OREGON SNOW SURVEYS, APRIL, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION			SNOW COVER MEASUREMENTS							
	Number or State	Sec. Twp. Range	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Years of Record	Past Record Av. Water Content (Inches)	
						1947	Same Approx. Date 1946	1945			
GRANDE RONDE RIVER (Cont'd.)											
Beaver Reservoir	188	8 5S 37E	5340	3-28	24.3	8.2	-	11.4	7	10.2	
Camp Carson	187	33 6S 36E	5970	3-30	17.0	5.8	10.3	-	8	8.8	
Meacham	221	24&25 1S 35E	4300	3-28	1.2	0.5	13.1	9.9	18	8.2	
Moss Spring	186A	28 3S 41E	5850	3-29	49.7	18.5	27.1	21.6	9	24.0	
Summit Springs	184	9 6S 37E	6000	3-27	50.0	21.8	20.5	19.2	11	20.8	
Taylor Green	185	3 6S 42E	5740	3-30	33.8	12.4	21.4	14.7	9	15.3	
Tollgate	212	32 4N 38E	5070	3-28	52.0	21.4	39.9	26.0	16	25.9	
L O W E R C O L U M B I A D R A I N A G E											
WALLA WALLA RIVER											
Tollgate	212	32 4N 38E	5070	3-28	52.0	21.4	39.9	26.0	16	25.9	
UMATILLA RIVER											
Emigrant Springs	222	29 1N 35E	3925	3-28	0.0	0.0	9.5	7.7	18	5.4	
Lucky Strike	223	28 3S 32E	5050	3-27	31.0	10.0	16.4	13.2	8	11.6	
Meacham	221	24&25 1S 35E	4300	3-28	1.2	0.5	13.1	9.9	18	8.2	
Tollgate	212	32 4N 38E	5070	3-28	52.0	21.4	39.9	26.0	16	25.9	
WILLOW CREEK											
Arbuckle Mountain	241	33 4S 29E	5400	3-25	9.1	3.7	15.6	11.8	18	9.9	
JOHN DAY RIVER											
Arbuckle Mountain	241	33 4S 29E	5400	3-25	9.1	3.7	15.6	11.8	18	9.9	
Beech Creek Summit	246A	4 12S 30E	4800	3-27	0.0	0.0	7.0	5.4	10	5.0	
Blue Mountain Springs	133	21 15S 35E	5900	3-27	29.3	10.4	22.0	14.1	17	14.4	

L O W E R C O L U M B I A D R A I N A G E

OREGON SNOW SURVEYS, APRIL, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION		SNOW COVER MEASUREMENTS						
	Number or State	Sec. Twp. Range Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Past Record Years of Record	Av. Water Content (Inches)
					1947	1946	1945		
JOHN DAY RIVER (Cont'd.)									
Blue Mountain Summit	141	6 12S 36E	5098	3-26	6.3	2.4	11.3	7.7	12 6.8
Dixie Springs	244	28 11S 34E	6650	3-27	55.3	21.4	31.1	20.2	11 22.7
Gold Center	249	21 9S 36E	5340	3-29	22.6	6.9	14.6	12.7	8 10.6
Izee Summit	964	28 16S 29E	5293	3-27	4.7	1.6	8.9	9.0	11 7.0
Olive Lake	245	14 9S 33½E	6000	3-28	49.8	19.7	24.0	17.6	11 17.3
Snow Mountain	965	1 19S 26E	6300	3-25	26.9	9.7	17.7	14.6	3 12.8
Starr Ridge	247B	20 15S 31E	5150	3-27	1.2	0.3	7.5	4.3	11 4.0
DESCHUTES RIVER									
Caldwell Ranch	326	30 21S 8E	4400	3-31	T	T	17.1	2.1	10 7.3
Cascade Summit	321	7 23S 6E	4880	3-27	50.4	21.0	43.9	20.8	17 28.2
Charlton Lake	327	23 21S 6E	5750	4-1	75.6	28.1	45.8	18.3	10 25.9
Clear Lake	361	29 4S 9E	3500	3-30	3.4	1.4	18.4	6.9	15 12.7
Crescent Lake	325	11 24S 6E	4760	3-27	0.0	0.0	19.5	T	12 7.1
Derr	343	14 13S 23E	5670	3-31	14.7	5.3	11.5	10.4	10 9.8
Hogg Pass	351	24 13S 7½E	4755	3-26	87.3	35.8	59.4	31.2	9 36.4
Marks Creek	344	25 12S 19E	4540	3-31	0.0	0.0	5.1	1.0	9 2.8
New Dutchman Flat	324A	21 18S 9E	6400	Measurement delayed				37.3	11 45.1
Ochoco Meadows	341	21 13S 20E	5200	3-31	0.0	0.0	16.4	11.0	18 8.8
Rock Creek	362	1 4S 10E	4200	3-28	14.1	6.2	21.4	9.3	2 15.4
Snow Mountain	965	1 19S 26E	6300	3-25	26.9	9.7	17.7	14.6	3 12.8
Three Creeks Meadows	331	3 17S 9E	5600	4-1	34.5	14.5	31.0	9.1	18 18.5
HOOD RIVER									
Brooks Meadows	431	2 2S 10E	4300	3-27	3.8	1.6	20.3	8.0	14 9.3

OREGON SNOW SURVEYS, APRIL, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION		SNOW COVER MEASUREMENTS							
	Number or State	Sec. Twp. Range Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Years of Record	Past Record Av. Water Content (Inches)	
					1947	1946	Same Approx. Date			
SANDY RIVER										
Clear Lake	361	29 4S 9E 3500	3-30	3.4	1.4	18.4	6.9	15	12.7	
Phlox Point-Mt. Hood	452	6 3S 9E 5600	3-28	108.4	54.2	90.9	47.1	10	55.3	
Still Creek	451	25 3S 8½E 3700	3-28	25.2	10.5	34.5	18.3	10	19.2	
CLACKAMAS RIVER										
Peavine Ridge	591	14&15 6S 7E 3500	4-1	20.2	8.7	24.8	10.4	10	16.5	
WILLAMETTE RIVER										
Cascade Summit	321	7 23S 6E 4880	3-27	50.4	21.0	43.9	20.8	17	28.2	
Champion	522	12 23S 1E 4500	4-1	26.0	10.1	48.4	18.8	8	22.0	
Charlton Lake	327	23 21S 6E 5750	4-1	75.6	28.1	45.8	18.3	10	25.9	
Hogg Pass	351	24 13S 7½E 4755	3-26	87.3	35.8	59.4	31.2	9	36.4	
Marion Forks	553	28 11S 7E 2730	3-26	7.3	3.4	18.0	T	6	7.4	
Mary's Peak	541	21 12S 7W 3620	3-25	0.5	0.4	23.3	19.3	8	9.0	
Santiam Junction	552	14 13S 7E 3990	3-26	19.7	8.9	38.1	14.8	6	18.2	
Waldo Lake	521A	15 21S 6E 5500	4-2	66.4	24.9	47.1	19.6	10	24.9	

I N T E R I O R D R A I N A G E

SILVER LAKE

Silver Creek

942 25&26 29S 13E 4900 3-31 0.0 3.4 0.0 6 1.1

CHEWAUCAN RIVER

Mill Creek

922 1 34S 17E 6200 3-28 4.3 1.3 11.0 7.8 8 5.6

OREGON SNOW SURVEYS, APRIL, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION			SNOW COVER MEASUREMENTS								
	Number or State	Sec. Twp. Range	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Years of Record	Past Record		
						1947	1946	1945		Same Approx. Date	Av. Water Content (Inches)	
HARNEY BASIN												
Deer Creek	973	17	36S 26E	6670	4-1	0.0	9.5	8.1	7	7.7		
Fish Creek	952	4	33S 33E	7900	3-26	60.8	-	27.1	7	23.6		
Hart Mountain	971	1	36S 25E	6350	4-1	0.0	0.0	3.4	8	1.7		
Idylwild Park	961A	33	20S 31E	5200	3-31	0.0	0.0	5.8	16	3.1		
Izee Summit	964	28	16S 29E	5293	3-27	4.7	1.6	8.9	11	7.0		
Rock Spring	134	23	18S 32E	5100	3-31	0.0	0.0	5.1	11	4.5		
Silvies	951	35	32S 33E	6900	3-26	25.1	8.6	19.4	9	13.6		
Snow Mountain	965	1	19S 26E	6300	3-25	26.9	9.7	14.6	3	12.8		
Starr Ridge	247B	20	15S 31E	5150	3-27	1.2	0.3	7.5	11	4.0		
GUANO LAKE												
Bald Mountain	Nev.	17	45N 21E	6720	3-31	0.0	0.0	5.1	7	2.7		
Guano Creek	972	13	36S 25E	6480	4-1	0.0	0.0	7.9	7	6.8		
WARNER LAKE												
Camas Creek	911A	5	39S 21E	5720	3-28	5.8	2.4	13.6	8	9.4		
UMPQUA RIVER												
Champion	522	12	23S 1E	4500	4-1	26.0	10.1	48.4	8	22.0		
Diamond Lake	743	29	27S 6E	5315	3-31	35.5	12.7	35.9	18	17.2		
Goolaway Gap	726	32	32S 3W	3000	3-31	0.0	0.0	0.0	11	1.5		
Goolaway Mountain	7215	30	32S 3W	3730	3-31	0.0	0.0	1.6	10	5.2		
N. Umpqua nr. Lake Creek	742	19	26S 6E	4215	3-31	6.5	2.4	20.8	10	9.4		
Trap Creek	741	1	27S 4E	3800	3-31	0.0	0.0	22.4	10	10.8		
Whaleback	7217	3	31S 2E	5140	4-1	54.0	20.3	-	9	32.3		

W E S T C O A S T D R A I N A G E

DRAINAGE BASIN and SNOW COURSE		LOCATION		SNOW COVER MEASUREMENTS											
				Number or State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)			Past Record	
1947	1946	1945	Years of Record								Av. Water Content (Inches)				
ROGUE RIVER															
Althouse	7216	17	41S	7W	4400	3-31	T	85.7	34.4	6.1	7.8	10	7.3		
Annie Spring	831	19	31S	6E	6018	3-28		82.3	19.3	69.3	36.1	14	42.5		
Big Red Mountain	729	31	40S	1W	6500	4-3		25.3	11.1	30.3	20.3	11	29.1		
Billie Creek Divide	722	30	36S	5E	6000	3-26		1.6	0.5	36.6	22.3	16	22.8		
Fish Lake	725	3	37S	4E	4865	3-26		0.0	0.0	19.0	10.0	13	12.8		
Goolaway Gap	726	32	32S	3W	3000	3-31		0.0	0.0	0.0	0.5	11	1.5		
Goolaway Mountain	7215	30	32S	3W	3730	3-31		16.7	7.1	1.6	5.7	10	5.2		
Grayback Peak	727	9	40S	5W	6000	3-29		0.0	0.0	28.2	20.2	11	25.9		
Hyatt Prairie Reservoir	723	15	39S	3E	4900	3-27		45.7	17.2	13.2	7.9	14	8.2		
Little Red Mountain	7210	25	40S	2W	6500	4-2		105.3	42.4	26.0	19.3	11	22.3		
Park Headquarters	838	8	31S	6E	6450	3-28		34.6	17.4	75.3	49.2	3	64.0		
Seragg Mountain (Calif.)	7220	9	47N	10W	6200	3-26		99.7	33.1	-	24.2	5	20.5		
Seven Lakes No. 1	7211	3	34S	5E	6800	3-29		76.3	29.0	60.2	51.8	11	55.9		
Seven Lakes No. 2	7212	26	33S	5E	6200	3-29		0.0	0.0	58.0	33.2	11	41.7		
Silver Burn	7219	30	30S	4E	3720	4-1		4.8	1.1	17.8	4.6	10	9.1		
Siskiyou Summit	728	17	40S	2E	4630	3-30		0.0	0.0	3.2	2.7	11	3.4		
South Fork Canal	7218	12	33S	3E	3500	4-1		33.8	13.4	0.0	0.0	10	0.7		
Wagner Butte	7213	1	40S	1W	6900	3-28		54.0	20.3	18.7	14.7	12	16.3		
Whaleback	7217	3	31S	2E	5140	4-1				-	34.6	9	32.3		
KLAMATH LAKE BASIN															
Annie Spring	831	19	31S	6E	6018	3-28		85.7	34.4	69.3	36.1	14	42.5		
Beatty 2/		22	36S	12E	4300	3-31		0.0	0.0	0.0	0.0	20	0.0		
Billie Creek Divide	722	30	36S	5E	6000	3-26		25.3	11.1	36.6	22.3	16	22.8		
Bly 101 Ranch 2/		22	35S	14E	4800	3-31		0.0	0.0	0.0	-	19	0.0		
Chemult No. 1	834	21	27S	8E	4760	N.R.:	believed bare			16.6	4.0	10	7.5		
Chiloquin 2/		34	34S	7E	4187	3-31		0.0	0.0	0.0	0.0	19	0.1		
Crowder Flat (Calif.)		30	47N	11E	5200	N.R.:	believed bare			0.0	-	7	0.0		

2/ Water content determined by melting one measured sample. (The California Oregon Power Co. station)

OREGON SNOW SURVEYS, APRIL, 1947

DRAINAGE BASIN and SNOW COURSE	LOCATION		SNOW COVER MEASUREMENTS									
	Number or State	Sec. Twp. Range	Elev.	Date of Survey	Snow Depth (In.)	Water Content (In.)	Same approx. Date	1945	1946	Years of Record	Past Record Av. Water Content (Inches)	
KLAMATH LAKE BASIN (Cont'd.)												
Crystal 2/		26	34S	6E	4200	3-31	0.0	0.0	9.5	T	17	4.5
Fort Klamath 2/		22	33S	7½E	4150	3-31	0.0	0.0	0.0	0.0	20	1.0
Harriman Lodge 2/		3	36S	6E	4200	N.R.: believed	baro		0.0	0.0	19	0.8
Hyatt Prairie Reservoir	723	15	39S	3E	4900	3-27	0.0	0.0	13.2	7.9	14	8.2
Kirk 2/		1	33S	7E	4533	3-31	0.0	0.0	6.0	0.0	17	1.8
Lake of the Woods No. 1	835	11	37S	5E	4960	3-31	3.8	1.7	13.8	6.2	10	9.2
Park Headquarters	838	8	31S	6E	6450	3-28	105.3	42.4	75.3	49.2	3	64.0
Quartz Mountain	811	2	38S	16E	5320	3-31	0.0	0.0	8.4	5.7	16	4.0
Quartz Mountain 2/		33	37S	16E	5504	3-31	T		8.5 ^a	6.5	16	4.7
Seven Lakes No. 1	7211	3	34S	5E	6800	3-29	99.7	33.1	60.2	51.8	11	55.9
Seven Lakes No. 2	7212	26	33S	5E	6200	3-29	76.3	29.0	58.0	33.2	11	41.7
Strawberry	837	4	40S	16E	5600	3-25	8.1	2.8	-	7.2	6	3.5
Summer Rim	841	15	33S	16E	7200	3-29	29.5	10.1	32.8	13.5	10	16.5
Sun Mountain	836	22	32S	7½E	5350	3-29	38.9	15.4	42.9	20.3	10	27.4
Taylor Butte	842	16	33S	11E	5100	3-28	0.0	0.0	8.1	1.9	10	3.4
Yamsey 2/		20	31S	11E	4600	3-31	0.0	0.0	1.5	0.0	16	0.6

a - Estimated

2/ Water content determined by melting one measured sample. (The California Oregon Power Co. station)

IRRIGATION WATER SUPPLY FORECASTS

SEASON OF 1947

- Foreword -

Water content of snow as reported in this bulletin was obtained from snow surveys made over all Oregon snow courses between March 25 and April 3. Watershed soil moisture determinations were made from soil samples obtained at 12 stations in central and eastern Oregon between March 12 and 20.

Local water forecast committee meetings were held in important irrigated sections of the State during the period March 29 to April 7, as follows: The Dalles for Northcentral Oregon; Pendleton for the Umatilla-Walla Walla Basin; Baker for Northeastern Oregon; Ontario for Southeastern Oregon; Canyon City for the John Day Basin; Burns for Harney Basin; Prineville for Central Oregon (the Deschutes Basin); Lakeview for Southcentral Oregon; and Klamath Falls for Southern Oregon. Nearly all of the 35 cooperating agencies were represented at these meetings.

Each committee's report, outlining the irrigation water supply prospect for 1947 in each area, is reproduced herewith. Modifications of these forecasts may be required later if excessive deviations of precipitation and temperature from normal occur during the runoff season.

Forecasts

Northcentral Oregon

Water supply prospects for 1947 in the Hood River and Wasco Counties will vary from good to deficient depending upon source of supplies. Soils are fairly well wetted despite a deficiency in late winter precipitation.

The flow of White River at Tygh Valley in Southern Wasco County is forecast at 60,000 acre feet for the April 1 - September 30 period or about 46 percent of the 10-year average for 1936-1945. This flow will be about the same as that of the low-water year of 1934, but not as low as in 1941. Lands served from the Rock Creek reservoir will have an adequate supply until about the last of July. Badger reservoir is reported to be empty but sustained flow of this creek should carry the older rights nearly through the season. The Juniper Flat area served by Clear Creek and Frog Creek will have short supplies. South Wasco stubble lands are wet down to about 20 inches depth as against 38 inches last year. Fall wheat is wet down to bedrock at 32 inches.

Fifteenmile Creek regulation is expected about July 1 this year as compared with July 10 last year and July 11 in 1945. Mill Creek and Eight-mile will go on regulation probably about June 25 this year. Soils in the orchard lands near The Dalles are not as well wetted as last year and there will probably be some disking under of cover crops to conserve moisture.

Sherman County stubble lands have a moisture penetration of about 27 inches as compared with a normal of 36 to 40 inches.

Hood River Valley lands will have fairly good water supplies with some deficiencies by July 20th. Moisture penetration in the Hood River orchard soils is reported to be average or better. Flow of the West Fork of Hood River is forecast at 138,000 acre feet for April through September. This flow will be 101 percent of the 10-year average flow. The Middle and East Forks of Hood River will flow approximately 20 and 30 percent of the West Fork, respectively, or 27,500 and 41,500 acre feet. Some lands served from the Mt. Defiance area may have late season shortages.

Umatilla-Walla Walla Basin

Good to deficient water supplies for irrigated lands of this area are indicated by the present snow cover which varies from 86 percent normal down to 6 percent and to bare ground on one important snow course. Early winter floods of record breaking proportions have caused the loss of much early snow and have reduced the amount available for summer runoff considerably.

Crop land soil moisture in the dry wheat area is about average although not as good as in 1943 or 1946. No drying winds have been experienced as yet this year.

The South Fork of the Walla Walla River is forecast to flow 54,000 acre feet during the six months yet to come. This flow will be about 86 percent of the 10-year average and will furnish generally good supplies although some late deficiencies will be experienced. The Hudson Bay lands will likely be cut off early in July. Water supplies will be about the same as in 1944.

The Umatilla River flow at the upper station near Gibbon will probably be about 52,000 acre feet for the 6 month period or 80 percent of the 10-year average. This expected flow is slightly less than that of 1944.

Flow of the main Umatilla River at Pendleton will be 100,000 acre feet or 66 percent of the 10-year average. This flow will be less than the 122,700 obtained in 1944 and about the same as in 1940. Practically all lands served direct from the Umatilla will have some late season shortage.

Cold Spring Reservoir now is full and has in storage 50,000 acre feet. This supply, supplemented with water direct from the Umatilla, will be sufficient for all lands served from this source.

McKay Reservoir has 66,310 acre feet of water in storage, a supply sufficient for all lands irrigated by its waters.

McKay Creek is forecast to flow 17,000 acre feet into McKay Reservoir during the April-September season, possibly filling the reservoir. This flow will be 64 percent of the 10-year average and will be similar to the flow of 1941.

Birch and Butter Creeks will be greatly deficient in flow this season with a flow similar to 1944 expected in Birch and similar to 1940 in Butter Creek.

Lands served from Willow Creek in Moro county will have greatly deficient water supplies, probably similar to 1940 or 1941.

Northeastern Oregon

1947 water supply outlook for irrigated lands in Wallowa, Union, and Baker Counties varies from good for lands served from the Wallowa Mountain Range to only fair or deficient in other parts of northeastern Oregon. Snow cover at high elevations is normal or better but at lower elevations is greatly subnormal. Crop lands are well wetted and forage growth on low range lands is well advanced.

Above normal snow cover will provide ample water for irrigation supplies in Wallowa County. Imnaha River is expected to discharge 300,000 acre feet during April-September or about 111 percent of its 10-year average. 1946 flow for the same period was 320,500 acre feet. Wallowa River, East Fork, is forecast to flow 12,000 acre feet during April-September. This will equal 119 percent of the 10-year (1936-45) average. Flow will be only slightly less than 13,300 acre feet discharged last year.

Wallowa Lake has in storage about 25,000 acre feet. This exceeds the 10-year average of 20,800 acre feet. Adequate water supply for all lands served from this reservoir is in prospect.

Hurricane Creek will flow about 43,000 acre feet this year during April-September. This will equal 109 percent of the 10-year average. Lostine River with a 10-year average discharge of 110,200 acre feet for the irrigation season will flow this year about 115,000 acre feet or 104 percent of average. Bear Creek will probably discharge 58,000 acre feet or 93 percent of average for the same period. All these tributaries to Wallowa River will carry sufficient water for adequate irrigation supplies this year.

Grande Ronde River at La Grande will have reduced flow this year. Discharge of 115,000 acre feet is expected for the 6 months season; this will be 74 percent of the 1936-45 average and means water shortage for some users. Catherine Creek will have a flow 94 percent of average or about 60,000 acre feet. No water shortages are foreseen for lands served from this source.

Baker Valley, served by Powder River and its tributaries, will have a spotty water supply. Powder River, main stem above Baker, is forecast to flow 29,000 acre feet as compared with average of 55,000 for 6 months April through September. This flow will only equal 53 percent of average and will furnish only slightly better supplies than in 1944. Shortages of water are definitely indicated. Flow of North Powder River is not forecast since no flow records are available for comparison, but snow cover at Anthony Lake and vicinity indicates better conditions than on the main Powder River. Water content of snow there is 119 percent of average.

Thief Valley reservoir is full, as usual, thus assuring adequate supplies to lands in Lower Powder River Valley. Lands served from Fagle and Pine Creeks should have adequate water supplies since snow cover in those watersheds is about 80 percent of average. No streamflow records are available for these two streams, so volumetric forecasts cannot be made.

Inflow into Unity reservoir on the Burnt River will be 25,000 acre feet as compared with 10-year average of 34,300; 73 percent of average. This reservoir now stores 24,000 acre feet and can easily be filled, thus assuring downstream lands a good water supply. Irrigated lands on the South Fork

above the reservoir will have enough water this year, but those on the North Fork are expected to have only a fair supply at best.

Southeastern Oregon

Water stored behind irrigation dams will be the saving factor in Malheur County's agriculture this year. Streamflow throughout the County will be very low, averaging only 40-50 percent of 10-year average. Only those lands served from reservoirs will have good irrigation supplies.

Owyhee reservoir now stores 595,380 acre feet. This supply is ample for all lands served from this reservoir. Reservoir inflow during the next 6 months is forecast at 200,000 acre feet or only 44 percent of the 10-year average 1936-45. Last year's inflow was 467,300 acre feet. This year's inflow will be very similar to that of 1940 when 194,000 acre feet ran into this large reservoir.

Flow of Malheur River, Middle Fork, is forecast at 30,000 acre feet for April-September as compared with 10-year average of 73,200 acre feet. Flow will be only 41 percent of average. North Fork of Malheur River is expected to flow 28,000 acre feet or only 49 percent of average. Flow of these two streams will approximate that of 1944.

Storage in Warm Springs and Agency Valley reservoirs is 136,000 and 51,000 acre feet respectively. Water stored is nearly as much as last year. Adequate supplies are thus guaranteed for lands served from these reservoirs. Lands below these reservoirs not served therefrom will have generally deficient supplies.

Bully Creek and Willow Creek have already discharged their main flow for this season. Water supply to lands served from these sources will be greatly deficient, with exception of lands served from Willow Creek reservoir.

Jordan Valley will experience a severe water shortage this year. Snow cover in the nearby mountains is very short. Jordan Creek spring run is nearly finished. Antelope reservoir stores only 11,000 acre feet. This equals 60 percent of the 10-year average. Antelope reservoir stored 15,000 acre feet in 1946 and 22,600 acre feet in 1945 as of April 1.

John Day River Basin

High elevation snow cover is about average, but low elevation snow is greatly subnormal or entirely lacking. Therefore, water supply outlook for irrigated lands in the John Day River Basin in 1947 is spotty. Crop land soils are well wetted. High watershed soils also are well wetted so streamflow will generally equal about 75 percent of average.

Strawberry Creek above Prairie City is forecast to flow 6,000 acre feet for the 6 summer months as compared with 9,900 last year and 7,500 for the 10-year (1936-45) average. Water shortages will occur after July 1 unless above normal summer precipitation occurs.

John Day River at Prairie City will discharge about 33,000 acre feet during April-September. This flow will equal 76 percent of average, but only about

half of that received last year. Later water rights will experience deficient supplies.

John Day River, Middle Fork at Ritter is forecast to flow 80,000 acre feet as compared with 10-year average of 103,300 and with last year's flow of 140,200 acre feet for April-September. No shortages are foreseen for lands served direct from this stream.

John Day River, North Fork near Dale will flow 160,000 acre feet during the next 6 months as compared with 267,800 last year and 10-year average of 208,700 acre feet. There always is ample water for lands served from this stream.

John Day River, South Fork has poor snow cover on headwaters near Izee. Snow cover averages only 20 percent of normal, and will result in deficient water supply.

Grant County lands near Monument served from streams heading at low elevations will have deficient water supplies this year.

Wheeler County lands in the Mitchell, Spray, Twickenham, Service Creek, and Clarno areas will experience water deficiencies, except where water is obtained direct from the main John Day river.

Harney Basin

Hay lands of Harney Basin for the most part are well wetted, with some irrigation already begun. High watershed soils are literally soaked and will contribute well toward runoff. Snow cover in the mountains of the basin is greatly deficient, however, and streamflow will accordingly be greatly reduced.

Silvies River, now discharging considerable water, is forecast to flow only 30,000 acre feet during the next 6 months as compared with 99,600 last year and with 10-year average of 84,400 acre feet. This flow will not be as low as 22,500 acre feet obtained in 1944 but will provide good supplies only to the early water rights. Holders of later rights will be cut about May 1 and some will experience very deficient supplies.

Silver Creek also has an early flow but will carry a somewhat better supply this year for lands served from it due to a better snow cover on its watershed.

Donner und Blitzen River near Frenchglen will probably deliver only 50,000 acre feet during the next 6 months, as compared with 95,000 in 1945 and 46,000 in 1944. The older rights on this stream will have only fair supplies with most of the rights receiving greatly deficient supplies this year.

Trout Creek lands will receive a greatly deficient supply of water as will most all the lands in Catlow Valley. Roaring Springs will furnish its usual good supply. Rock Creek will likely fail to flow as far as the county line.

Central Oregon

Although snow cover in the watershed at the head of Deschutes River is satisfactory only at the higher elevations, outlook for irrigation supplies this year is quite satisfactory. Conditions on Crooked River watershed, however, are very unsatisfactory with little or no snow cover except in one small area near Snow Mountain.

Ochoco Reservoir stores 32,360 acre feet, largely held over from the abundant supplies of last season. This will furnish a satisfactory water supply to all lands on the Ochoco Project. Inflow into the reservoir, however, is forecast to be only 2,500 acre feet for the next 6 months. This inflow will equal only 14 percent of the 10-year average.

Beaver and Rager Creeks and other small tributaries of Crooked River are expected to deliver a very deficient supply this year. Flow of Crooked River will similarly be greatly below average beginning in July.

Water supplies to the Arnold, Central Oregon, Deschutes County Municipal, North, and Swalley Canals will be sufficient for all needs. Although stream-flow generally will be less than that of last year it will be about average. Storage supplies are greater than at this time last year.

Deschutes River above Crane Prairie reservoir (below Snow Creek) is forecast to flow 45,000 acre feet during the next 6 months or 105 percent of the 10-year average. Total inflow into Crane Prairie reservoir for the stream-year 1947 will be about 142,000 acre feet and about the same as in 1945. This reservoir now stores 42,000 acre feet as compared with 39,600 last year and average of 35,400 acre feet.

Crescent Lake now stores 52,000 acre feet as compared with 33,300 last year and 10-year average of 35,100 acre feet. Crescent Lake net inflow is forecast to reach 12,000 acre feet, or 94 percent of average, during the next 6 months.

Odell Creek will discharge 23,000 acre feet as compared with 32,600 last year and with 10-year average of 24,400 acre feet for April-September.

Tumalo Creek combined with Columbia Southern Canal will furnish 38,000 acre feet in the next 6 months as compared with 41,800 average.

Squaw Creek will discharge 44,000 acre feet April through September as compared with 63,500 last year and with 10-year average of 44,100 acre feet. This will furnish a good supply for only 1,200 acres of land with early rights. The remaining lands served from this source will have fair supplies with some late deficiencies. However, lands under the Plainview and McAllister ditches will have very little water.

Wickiup reservoir now stores 97,800 acre feet. This will provide an adequate water supply for 11,000 acres in the Madras area expecting water from this source this year.

Lonepine area should receive satisfactory water supplies this year but the Trout Creek vicinity will be greatly deficient early in the season.

Appendix

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Range forage conditions on lower areas are advanced over the usual condition with soils well wetted and growth likely to be rapid when temperatures rise.

Southcentral Oregon

Until a few weeks ago the outlook here was extremely critical. Recent storms have brought additional snows to high watersheds and precipitation to lower areas. Storage in Drew Creek reservoir has greatly increased so the outlook, though far from bright, has shown some recent improvement.

Silver Lake area had little moisture all winter and can expect little runoff from its higher areas which have lacked snow most of the winter. Thompson Valley reservoir now stores 8,150 acre feet. Most of this is held over from last year. Little inflow into this reservoir is expected. Lands served from this reservoir will have good supplies, but 4,800 additional acres depending on unregulated flow will have a greatly deficient supply.

Summer Lake Basin at its northern end will have the usual good supply for about 2500 acres from Ana River. The remaining 2000 irrigated acres will depend on small water supplies coming off the Rim and will be short late in the season.

Chewaucan River furnishing water to irrigated lands in Abert Lake Basin will flow about 30,000 acre feet during the next 3 months. This will supply only half the water that was available in 1945. Some 5,000 acres in this basin will have fair water supplies with mild late shortages while the remaining 22,000 irrigated acres will have greatly deficient supplies.

Goose Lake Valley water users served from Drew Creek reservoir are now assured of good supplies with 35,000 acre feet now in storage and with expectation that storage will increase to a minimum of 45,000 acre feet. Cottonwood reservoir has 3,000 acre feet in storage now and may fill. Of 12,000 irrigated acres in the Valley, not served from reservoir supplies, about 3000 acres will have fair supplies and the balance will be deficient.

Warner Valley irrigated lands served from Honey Creek will have greatly deficient water supply. This also will be the case with lands in the extreme southern end of the valley. Deep Creek is expected to discharge only about 30,000 acre feet for April-June or 48 percent of 10-year average. This will be considerably less than 1944 flow of 40,000 acre feet but will furnish a good supply for about 3000 acres. Some 6000 acres will receive additional water by pumping from Hart Lake, insuring this year's hay crop.

Hart Mountain Antelope Refuge has had very little snow all winter and will be critically short of water very early this year. Rock Creek is not likely to flow beyond refuge headquarters and Deer Creek will have a similarly short flow. There seems to be little water in sight for hay lands this year.

Guano Creek watershed has no snow and will produce only a critically short water supply this year.

Southern Oregon

The Southern Oregon water prospects vary from good to poor, with practically all lands served from reservoir storage expecting good supplies.

Upper Klamath Lake has 407,800 acre feet in storage and can expect an inflow during the next 6 months of 375,000 acre feet, which is 78 percent of the 10-year average. Inflow for this period last year was 557,000 acre feet.

Williamson River is forecast to discharge 240,000 acre feet during the April-September period, or 64 percent of average. This will be similar to 1944 discharge of 263,200 acre feet, and much less than the 415,400 acre feet received last year. No shortages are foreseen for lands served from this stream.

Sprague River will flow 125,000 acre feet, or only 54 percent of average and about half of last year's flow of 261,900. Short supplies are expected for most of the 30,000 acres served from this source.

Gerber reservoir has 42,510 acre feet in storage now. Inflow of about 6,000 acre feet is forecast for the next 6 months. Inflow to April 1 was 18,500 acre feet. Total inflow for the stream year is expected to be 24,500 acre feet, or 46 percent of long time average. This is ample water for this season's irrigation, but there will be little holdover for next season.

Clear Lake reservoir inflow to April 1 was 46,800 acre feet. Inflow for April-September will probably be about 12,000 acre feet, making the total for the stream year 58,800 acre feet or 53 percent of the long time average. Storage as of April 1 was 226,700 acre feet. This will provide ample water for irrigation purposes in 1947. There will probably be a fair holdover for the 1948 season.

Rogue River, North Fork above Prospect, is forecast to discharge 210,000 acre feet in the next 6 months, equivalent to 73 percent of 10-year average. This will compare with 237,300 acre feet discharged in 1944. Last year's flow was measured at 370,400 acre feet for the same period.

Rogue River, Middle Fork, plus Power Canal, will discharge 50,000 acre feet in the next 6 months, equivalent to 72 percent of average.

Rogue River, South Fork above Imnaha Creek, is forecast to discharge 30,000 acre feet or 58 percent of average for the April-September period.

Rogue River below South Fork will discharge 460,000 acre feet or 73 percent average for the next 6 months.

Rogue River at Grants Pass is expected to flow 75-80 percent of average with estimated low flow in summer months as follows:

<u>Month</u>	<u>Low Monthly Flow</u>	
	<u>Obtained-1946</u>	<u>Forecast-1947</u>
July	1434 c.f.s.	880 c.f.s.
August	1055 c.f.s.	760 c.f.s.
September	1067 c.f.s.	783 c.f.s.

CONTENTS

THE HISTORY OF THE UNITED STATES OF AMERICA, FROM THE FIRST DISCOVERY OF THE CONTINENT, TO THE PRESENT TIME. BY JAMES MADISON, ESQ.

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INDEX

Page	Page	Page
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5

Grants Pass Irrigation District can expect canal alternation by about August 1, since low flow is expected to go below 870 c.f.s. about that date. Exceptionally heavy summer rains can easily improve this outlook.

Bear Creek Valley lands will have water supplies varying from good to short. Fourmile Lake reservoir now stores 5,100 acre feet and should receive inflow of about 5,000 acre feet during the summer. Little Butte Creek below Fish Lake (natural flow) will discharge about 8,500 acre feet or 64 percent average during the next 6 months. These two sources, plus present Fish Lake storage of 4,600 acre feet, will furnish only fair supplies to the Medford Irrigation District. Water supply will approximate that of 1940 and 1941 when the district managed to "just get by". Rogue River Valley Irrigation District and Eagle Point District will have ample water.

Talent Irrigation District has a poor outlook with Hyatt reservoir now storing only 3,400 acre feet and with inflow of only 1,800 acre feet or 31 percent of normal to be expected in the period April through September. Emigrant reservoir now stores 6,800 acre feet but probably will fill. Total water available to the district from these sources thus will not exceed 12,000 acre feet, allowing for losses, whereas average seasonal use is 16,500 acre feet. Unusually heavy spring and summer rains are needed to improve this poor outlook.

Applegate and Illinois River lands will have short supplies, with regulation beginning about July 15. Applegate is forecast to flow 55,000 acre feet during the next 6 months, or 43 percent of average. Illinois River will have a comparable low flow.

Cow Creek in the Umpqua Basin will have critically short water supplies this year unless unusually heavy summer rains occur.

Flow forecasts for the North Umpqua River are tabulated on page 3.

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The following organizations cooperate in the Oregon snow survey work:

STATE

Idaho Cooperative Snow Surveys
Nevada Cooperative Snow Surveys
Oregon Agricultural Experiment Station
Oregon State Engineer and Corps of State Watermasters
Oregon State Highway Engineers

FEDERAL

Department of Agriculture
Forest Service
Soil Conservation Service
Department of Commerce
Weather Bureau
Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
Indian Service
National Park Service
War Department
Army Engineer Corps

PUBLIC UTILITIES

California-Pacific Utilities Company
Portland General Electric Company
The California Oregon Power Company

MUNICIPALITIES

City of Corvallis
City of LaGrande
City of The Dalles
City of Baker

IRRIGATION DISTRICTS

Associated Ditch Companies
Central Oregon Irrigation District
Deschutes County Municipal Improvement District
Grants Pass Irrigation District
Jordan Valley Irrigation District
Lakeview Water Users Incorporated
Medford Irrigation District
Ochoce Irrigation District
Rogue River Irrigation District
Talent Irrigation District
Vale-Oregon Irrigation District
Warm Springs Irrigation District

PRIVATE CORPORATIONS

Amalgamated Sugar Company

